AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-33 (canceled)

34. (new) A pharmaceutical composition comprising a compound having cytokinin activity and a pharmaceutically acceptable carrier in a dosage form effective to modulate glucose metabolism in a mammal when the composition is administered to the mammal at a concentration effective to modulate glucose metabolism, and wherein the compound is not metformin.

35. (new) The pharmaceutical composition of claim 34 wherein the compound having cytokinin activity is selected from the group consisting of N6-benzyladenine, N6-benzyladenine hydrochloride, N6-benzyladenosine, N6-benzyladenine-3-glucoside, N6-benzyladenine-7-glucoside, N6-benzyladenine-9-glucoside, N6-benzyl-9-(2-tetrahydropyranyl)adenine, N6-benzyladenosine-5'-monophosphate, dihydrozeatin, dihydrozeatin riboside, dihydrozeatin-7-β-D-glucoside, dihydrozeatin-9-β-D-glucoside, dihydrozeatin-O-glucoside, dihydrozeatin-O-glucoside riboside, dihydrozeatin riboside-5'-monophosphate, dihydrozeatin-O-acetyl, N6-isopentenyladenine, N6-isopentenyladenosine, N6-isopentenyladenosine-5'-monophosphate, N6-isopentenyladenine-7-glucoside, N6-isopentenyladenine-9-glucoside, 2-methylthio-N6-isopentenyladenosine, 2-methylthio-N6-isopentenyladenine, 2-thio-N6-isopentenyladenine, 2-benzylthio-N6-isopentenyladenine, kinetin, kinetin riboside, kinetin-9-glucoside, kinetin riboside-5'-monophosphate, meta-topolin, meta-topolin riboside, meta-topolin-9-glucoside, ortho-topolin, ortho-topolin riboside, ortho-topolin-9-glucoside, trans-zeatin, trans-zeatin riboside, cis-zeatin, cis-zeatin riboside, trans-zeatin-7-glucoside, trans-zeatin-9-glucoside, trans-zeatin-O-glucoside, trans-zeatin-O-glucoside riboside, trans-zeatin riboside-5'-monophosphate, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, N2-acyl-guanine, N2-acyl-guanosine, 2-methylthio-trans-zeatin, and 2-methylthio-trans-zeatin riboside.

36. (new) The pharmaceutical composition of claim 34 wherein the compound having cytokinin activity comprises a moiety is selected from the group consisting of N6-benzyladenine, dihydrozeatin, N6-isopentenyladenine, 2-methylthio-N6-isopentenyladenine, 2-thio-N6-isopentenyladenine, 2-benzylthio-N6-isopentenyladenine, kinetin, meta-topolin, ortho-topolin, trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, N2-acyl-guanine, and 2-methylthio-trans-zeatin.

37. (new) The pharmaceutical composition of claim 34 wherein the compound having cytokinin activity is selected from the group consisting of trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, and 2-methylthio-trans-zeatin, and wherein the compound is optionally covalently bound to a sugar.

38. (new) The pharmaceutical composition of claim 34 wherein the compound is present as a pharmaceutically acceptable salt, a hydrate, or in form of a prodrug.

39. (new) The pharmaceutical composition of claim 35 wherein the compound having cytokinin activity is selected from the group consisting of N2-acetylguanine, N6-benzyladenine, dihydrozeatin, cis-zeatin, trans-zeatin, N6-isopentenyladenine, kinetin, and meta-topolin.

40. (new) The pharmaceutical composition of claim 34, further comprising a second compound selected from the group consisting of a biguanide, a sulfonyl urea, a meglitinide, a thiazolidinedione, and a second compound having cytokinin activity.

41. (new) A method of modulating glucose metabolism in a mammal comprising a step of administering a compound according to claim 34 at a dosage effective to modulate glucose metabolism in the mammal.

42. (new) The method of claim 41 wherein the mammal is diagnosed with at least one of syndrome X, pre-diabetes, insulin resistance, type-2 diabetes, and dyslipidemia.

43. (new) The method of claim 41 wherein the administration is prophylactic administration to prevent at least one of Syndrome X, pre-diabetes, insulin resistance, type-2 diabetes, and dyslipidemia.

44. (new) The method of claim 41 wherein modulating glucose metabolism in a mammal comprises increasing glucose uptake in a muscle cell.

45. (new) The method of claim 41 wherein modulating glucose metabolism in a mammal comprises decreasing gluconeogenesis in a hepatocyte.

46. (new) The method of claim 41 wherein the compound having cytokinin activity is selected from the group consisting of trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, and 2-methylthio-trans-zeatin, and wherein the compound is optionally covalently bound to a sugar.

47. (new) A method of modulating lipid metabolism in a mammal that comprises a step of administering a compound according to claim 34 at a dosage effective to modulate glucose metabolism in the mammal, and wherein the compound is not N6-aralkyladenosine.

48. (new) The method of claim 47 wherein the mammal is diagnosed with at least one of Syndrome X and dyslipidemia.

49. (new) The method of claim 47 wherein the administration is prophylactic administration to prevent at least one of Syndrome X and dyslipidemia.

50. (new) The method of claim 47 wherein modulating lipid metabolism in a mammal comprises at least one of decreasing total serum cholesterol, decreasing serum LDL-cholesterol, and decreasing serum triglycerides.

51. (new) The method of claim 47 wherein the compound having cytokinin activity is selected from the group consisting of trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, and 2-methylthio-trans-zeatin, and wherein the compound is optionally covalently bound to a sugar.

52. (new) A method of performing an analytic test in a mammal comprising:

determining a concentration of a compound according to claim 34 in a biological fluid; and

correlating the concentration with at least one of a likelihood and presence of a metabolic disorder, wherein the disorder is selected from the group consisting of pre-diabetes, insulin resistance, type-2 diabetes, syndrome X, and dyslipidemia.

53. (new) The method of claim 52 wherein a decrease in the concentration of the compound is associated with an increased likelihood or presence of the metabolic disorder.